

July 3, 2002

MEMORANDUM TO: Farouk Eltawila, Director
Division of Systems Analysis and Regulatory Effectiveness
Office of Nuclear Regulatory Research

FROM: John H. Flack, Chief */RA/*
Regulatory Effectiveness Assessment and Human Factors Branch
Division of Systems Analysis and Regulatory Effectiveness
Office of Nuclear Regulatory Research

SUBJECT: MEETING WITH EXELON GENERATION COMPANY REGARDING
PLANS TO BRING CLOSURE TO THE PBMR PRE-APPLICATION
REVIEW

On May 16, 2002, from 9:00a.m. to 10:30p.m., the Nuclear Regulatory Commission (NRC) staff met with the representatives of Exelon and other interested stakeholders to discuss plans to terminate the Pebble Bed Modular Reactor (PBMR) pre-application review. Attachment 1 contains the meeting agenda. Attachment 2 contains a list of attendees. Attachment 3 contains NRC presentation material, and Attachment 4 contains Exelon presentation material.

Stuart Rubin (NRC) opened the meeting by stating the purpose of the meeting, which was to discuss both the NRC's and Exelon's plans for PBMR close-out activities. It was important for Exelon and the NRC to have a record of the work done on the PBMR so that work products would be available to the NRC and to other organizations who may possibly resume the PBMR project at a later date.

Rod Krich of Exelon stated that he preferred to refer to the conclusion of PBMR pre-application activities as a lay-up rather than a closeout, to indicate that Exelon could possibly resume PBMR studies at some later time. Kevin Borton of Exelon then presented Exelon's plans for the 'lay-up' of the PBMR pre-application and Exelon's plans for continuing dialogue with the NRC regarding new plant siting and licensing (Attachment 1).

Proposed Closure of Pre-Application Review Activities for the Pebble Bed Modular Reactor

Kevin Borton of Exelon presented an overview of Exelon's plans for closure of pre-application review activities. The overview indicated that Exelon's continued involvement in the PBMR is not consistent with the core business of Exelon, and while PBMR technology is full of potential, it is a project that is not for the undertaking of Exelon at this time. The project is well positioned

CONTACT: Shana R. Browde (srb1), REAHFB:DSARE:RES
(301)415-7652

for other companies with the appropriate core business expertise to pursue U.S. licensing of the PBMR. Exelon has three main close-out objectives:

1. Accurately capture work to date to reduce needs to revisit issues in the future.
2. Minimize costs and the need for additional work associated with close-out.
3. Address any outstanding issues if possible.

Exelon plans to submit a total of five papers to the NRC, including four submittals in May, followed by a submittal in June. The May submittals will cover Dana Power's trip report, an update of the November 16, 2001, fuel paper, a summary of historical German fuel testing, and a current containment position paper. The June submittal will provide a complete summary of pre-application review activities and correspondence, and will include Exelon's response to any Requests for Additional Information (RAIs) from the NRC. Additionally, Exelon has provided a response to SECY 01-0207 to Nuclear Energy Institute (NEI) for an industry statement, yet does not plan on responding on this SECY to the NRC.

Exelon is not necessarily looking for NRC staff response to these five submittals. These submittals fulfill prior responsibilities and are for information purposes only; the NRC is not expected to provide a review. In the discussion immediately following this presentation, the NRC indicated that they will give a quick review to each document submitted by Exelon and that the staff may choose to document their perspectives on issues as they see fit.

The presentation concluded with a description of continued activities at Exelon, which include Exelon's monitoring DOE fuel activities, Clinton plant site early site permit (ESP) application, and participation in new plant activities through participation with NEI task force groups.

Mr. Borton added that Exelon appreciated having had the opportunity to give the Combined Operating License (COL) a first run; the process helped to smooth out some questions on the logistics of COL. In addition, he stated that Exelon will continue to work on site permits for PBMRs in South Africa through September. Also, Exelon will continue to assess (for their internal records) which guidelines the PBMR meets and which aspects of the design are not yet covered by NRC guidelines. This includes the submittal of five papers (four in May, and one in June) by Exelon to the NRC. Exelon will discontinue any PBMR-related activities as of September, 2002.

Following Exelon's presentation, Stuart Rubin, RES, presented the NRC's plans for closing out PBMR technical review activities (Attachment 2), and Amy Cabbage, NRR, presented the NRC's plans for closing out PBMR legal and financial policy issues associated with the close-out.

NRC Plans for Concluding PBMR Pre-Application To Review Activities

Stuart D. Rubin of the NRC presented the NRC's plans for concluding PBMR pre-application review activities. The NRC plans for concluding the PBMR pre-application review activities involve sending five transmittals to Exelon. These transmittals will consist of: a response to ten of the eleven white papers submitted by Exelon; a response to the internal, at power Licensing

Basis Events (LBEs) submitted by Exelon on January 31, 2002, and the result of the 10 CFR 2.790 review. Three of the five transmittal letters will cover 10 of the 11 white papers submitted by Exelon for NRC staff review. These three transmittals will respond to the white papers regarding: (1) materials, (2) systems and analytical codes, and (3) fuels related white papers. Transmittal packages (1) and (2) are to be sent out in May 2002; transmittal package (3) is to be sent out in June 2002. The NRC staff does not plan to respond to the white paper regarding testing requirements for the issuance of a COL since this is already being addressed in rulemaking.

A fourth bundle of RAIs will be transmitted in May 2002 regarding the internal, at power Licensing Basis Events (LBEs) that were submitted by Exelon on January 31, 2002. The NRC staff does NOT plan to write RAIs for the safety grade Structure, System, and Components (SSCs) submitted by Exelon on March 15, 2002.

The NRC plans to review the revised white papers regarding PBMR nuclear fuel and PBMR design and heat removal which Exelon had withdrawn, revised and resubmitted in order to comply with 10 CFR 2.790 criteria. The outcome of the review will be documented in a fifth letter to Exelon. The comments will be transmitted following receipt of the revised white papers.

NRC Plans for Obtaining Commission Policy Decisions on PBMR Legal and Financial Issues

Amy Cubbage of the NRC gave a presentation on PBMR legal and financial issues. The NRC is meeting with Nuclear Energy Institute (NEI) on May 22, 2002, when it is expected that NEI will submit a white paper on modular plants. A new SECY will be developed to discuss generic answers to policy issues regarding High-temperature, Gas-cooled (HTGR) reactors.

Following the prepared presentations, there was discussion regarding how the NRC should bill Exelon for close-out pre-application review activities. The SECY expected for this summer will most likely be considered a generic expenditure. Exelon expects to be charged for the review of the rest of the white papers they submit to the NRC.

It was agreed through general discussion that the NRC's objectives are well-aligned with Exelon's three main close-out objectives. Exelon has the option whether or not to respond to any further RAIs. Exelon stated that they plan to write a summary letter of the status of the pre-application review issues, preliminary findings, and conclusions a few weeks after Exelon receives all of the RAI packages. In turn, Stuart Rubin said that the NRC would respond to the summary letter only if the NRC's staff views differed significantly from Exelon documented description of the issues, preliminary findings, or conclusion. These communications are meant to provide clarity to the status of the issues when the pre-application review ended.

The floor was opened to questions. As none were asked, Stuart Rubin gave closing remarks on behalf of the NRC as did Rod Kritch and Kevin Borton on behalf of Exelon. Following these remarks, the meeting was adjourned.

Attachments: As stated

Basis Events (LBEs) submitted by Exelon on January 31, 2002, and the result of the 10 CFR 2.790 review. Three of the five transmittal letters will cover 10 of the 11 white papers submitted by Exelon for NRC staff review. These three transmittals will respond to the white papers regarding: (1) materials, (2) systems and analytical codes, and (3) fuels related white papers. Transmittal packages (1) and (2) are to be sent out in May 2002; transmittal package (3) is to be sent out in June 2002. The NRC staff does not plan to respond to the white paper regarding testing requirements for the issuance of a COL since this is already being addressed in rulemaking.

A fourth bundle of RAIs will be transmitted in May 2002 regarding the internal, at power Licensing Basis Events (LBEs) that were submitted by Exelon on January 31, 2002. The NRC staff does NOT plan to write RAIs for the safety grade Structure, System, and Components (SSCs) submitted by Exelon on March 15, 2002.

The NRC plans to review the revised white papers regarding PBMR nuclear fuel and PBMR design and heat removal which Exelon had withdrawn, revised and resubmitted in order to comply with 10 CFR 2.790 criteria. The outcome of the review will be documented in a fifth letter to Exelon. The comments will be transmitted following receipt of the revised white papers.

NRC Plans for Obtaining Commission Policy Decisions on PBMR Legal and Financial Issues

Amy Cabbage of the NRC gave a presentation on PBMR legal and financial issues. The NRC is meeting with Nuclear Energy Institute (NEI) on May 22, 2002, when it is expected that NEI will submit a white paper on modular plants. A new SECY will be developed to discuss generic answers to policy issues regarding High-temperature, Gas-cooled (HTGR) reactors.

Following the prepared presentations, there was discussion regarding how the NRC should bill Exelon for close-out pre-application review activities. The SECY expected for this summer will most likely be considered a generic expenditure. Exelon expects to be charged for the review of the rest of the white papers they submit to the NRC.

It was agreed through general discussion that the NRC's objectives are well-aligned with Exelon's three main close-out objectives. Exelon has the option whether or not to respond to any further RAIs. Exelon stated that they plan to write a summary letter of the status of the pre-application review issues, preliminary findings, and conclusions a few weeks after Exelon receives all of the RAI packages. In turn, Stuart Rubin said that the NRC would respond to the summary letter only if the NRC's staff views differed significantly from Exelon documented description of the issues, preliminary findings, or conclusion. These communications are meant to provide clarity to the status of the issues when the pre-application review ended.

The floor was opened to questions. As none were asked, Stuart Rubin gave closing remarks on behalf of the NRC as did Rod Kritch and Kevin Borton on behalf of Exelon. Following these remarks, the meeting was adjourned.

Attachments: As stated

Distribution w/o atts.: See attached list

C:\MYFILES\Copies\minutes_PBMR_16_May_2002b.wpd

*See previous concurrence

OAR in ADAMS? (Y or N) Y ADAMS ACCESSION NO.: 021840782 TEMPLATE NO. RES-006

Publicly Available? (Y or N) Y DATE OF RELEASE TO PUBLIC _____ SENSITIVE? N

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

OFFICE	REAHFB	C	REAHFB		C:REAHFB	
NAME	SBrowde:dfw:mtb	SRubin		JFlack		
DATE	07/01/02*	07/01/02*		07/03/02*		

SUBJECT: MEETING WITH EXELON GENERATION COMPANY REGARDING
PLANS TO COMPLETE THE PBMR PRE-APPLICATION REVIEW

Distribution w/o atts.:

DSARE R/F

REAHFB R/F

AThadani/JStrosnider, RES

SNewberry, RES

MMayfield, RES

CAder, RES

PNorian, RES

JRosenthal, RES

JIbarra, RES

DCarlson, RES

RTripathi, RES

PKadambi, RES

SArmdt, RES

RMeyer, RES

RLloyd, RES

SCollins, NRR

JLyons, NRR

ACubbage, NRR

RCaruso, NRR

UShoop, NRR

WBorchardt, NRR

YOrechwa, NRR

EFox, NRR

JCushing, NRR

ACRS

JWilson, NRR

NGilles, NRR

MVirgilio, NMSS

PPierson, NMSS

JDunn-Lee, OIP

HFaulkner, OIP

JMoore, OGC

AGENDA

NRC Meeting with Exelon on the PBMR Pre-Application Review
May 16, 2002, 9:00 am – 12:00 pm;

9:00-9:15 am	Introductory Remarks (Stuart Rubin)	NRC
9:15-10:00 am	Exelon Plans for Concluding PBMR Pre-Application Review Activities (Kevin Borton, Rod Krich)	Exelon
10:00-10:15 am	NRC Plans for Concluding PBMR Pre-Application Review Activities (Stuart Rubin)	NRC
10:15-10:30 am	NRC Plans for Obtaining Commission Policy Decisions on PBMR Legal and Financial Issues (Amy Cubbage)	NRC
10:30-10:45 am	Open Discussion of Planned Actions	All
10:45-11:00 am	Stakeholder Comments	
11:00-11:15am	Closing Remarks	NRC/Exelon
11:15 am	Adjourn	

**ATTENDANCE LIST
NRC/EXELON MEETING
5/16/02**

NAME	ORGANIZATION	TELEPHONE	E-MAIL ADDRESS
Rod M. Krich	Exelon nuclear	630-657-2813	rod.krich@exeloncorp.com
Kevin Borton	Exelon nuclear	610-765-5528	kevin.borton@exeloncorp.com
Lane Hay	SERCH Bechtel	301-228-6312	hlhay@bechtel.com
Amy Snyder	NRC/RES	301-415-7644	ams3@nrc.gov
Sharon Steele	NRC/NMSS/FCSS	301-415-7078	sas@nrc.gov
Jenny Weil	McGraw-Hill	202-383-2161	jenny_weil@platts.com
Joe Muscara	NRC/RES/DET	301-415-5844	jxm8@nrc.gov
Ron Lloyd	NRC/RES/DSARE	301-415-7479	rl1@nrc.gov
Horace Hall	UCAR Carbon	304-624-1296	horace.hall@ucar.com
Dobie McArthur	General Atomics	202-496-8216	mcarthur@ga.radix.net
Paul Gunter	NIRS	202-328-0002	pgunter@nirs.org
Jocelyn Mitchell	NRC/RES	301-415-5289	jam@nrc.gov
Michael Soulard	AECL	905-823-9040	soulardm@aecl.com
Raji Tripathi	NRC/RES/DSARE	301-415-7472	rt1@nrc.gov
Leslie Fields	NRC/RES/NRR/NRLPO	301-415-1186	lcf@nrc.gov
Amy Cubbage	NRC/RES/NRR/NRLPO	301-415-2875	aec@nrc.gov
Jerry Wilson	NRC/NRR/NRLPO	301-415-3145	jnw@nrc.gov
Jim Lyons	NRC/NRR/NRLPO	301-415-1126	jel@nrc.gov
John Flack	NRC/RES/DSARE	301-415-5739	jhf@nrc.gov
Donald Carlson	NRC/RES/DSARE	301-415-0109	dec1@nrc.gov
Charles Aden	NRC/RES/DSARE	301-415-0135	cea@nrc.gov
Stuart Rubin	NRC/RES	301-415-7480	sdr1@nrc.gov
Undine Shoop	NRC/NRR/SRXB	301-415-2063	uss@nrc.gov
Tom King	NRC/RES	301-415-6345	tlk@nrc.gov
Shana Browde	NRC/RES/DSARE	301-415-7652	srb1@nrc.gov
Charles Brinkman	Westinghouse	301-881-7040	brinkmcb@westinghouse.com
Jose Ibarra	NRC/RES/DSARE	301-881-7040	jgi@nrc.gov



NRC Plans for Concluding PBMR Pre-Application Review Activities

May 16, 2002

Stuart D. Rubin
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission

NRC Open Items: Technical, Programmatic and Procedural Correspondence and Documents

- Technical white papers
- Licensing basis events and safety grade SSCs
- Part 10 CFR 2.790 Resubmittals
- Legal and financial issues review (Amy Cubbage)

Technical White Paper Reviews

Meeting Date	PBMR Presentation Technical Topic at NRC/Exelon/DOE Meeting	Exelon Technical White Paper	
		Title	Date
Jun 12-13, 2001	Fuel Overview -Design, Manufacturing, QC and Qualification	PBMR Nuclear Fuel	11/16/01
		Fuel Fabrication Quality Control Measures and Performance Monitoring Plans for PBMR Fuel	1/31/02
Jul 17-18, 2001	Design Codes and Standards	Summary of PBMR Design Codes and Standards	10/30/01
		RPV and Connecting Piping	12/17/01
	Fuel Irradiation Program	Pebble Bed Modular Reactor Fuel Qualification Test Program	3/18/02
Aug 15-16, 2001	Analytical Codes and Software Control	PBMR Analytical (Computer) Codes Data Table	10/30/01
	Fuel Design Logic	None	N/A
	Core Design	PBMR Design and Heat Removal Preliminary Description	3/04/02
	Heat Removal		
Oct 25, 2001	High Temperature Materials Graphite	Graphite Presentation to USNRC in Support of PBMR Pre-Application Activities	10/23/01
	Control of Chemical Attack	Control of Chemical Attack in the PBMR	10/23/01
	Systems Design Approach and Status	None	N/A
	High Temperature Materials	None	N/A
Nov 29-30, 2001	Operational Modes and States	PBMR Operational Modes and States	11/27/01
	Testing Requirements for a Combined License	Testing Requirements for Issuance of a Combined License	11/27/01
Mar 28 2002	Pebble Bed Modular Reactor Fuel Qualification Test Program	Pebble Bed Modular Reactor Fuel Qualification Test Program	3/18/02

Technical White Paper Review Closure Plans - RAIs

- Documented for each¹ technical white paper
- Catalogued by applicability: pre-application, NRC infrastructure, or license application
- Three NRC transmittal letters:

May 2002 (Materials; Systems & Analytical Codes)
June 2002 (Fuel Related)

¹ No RAIs planned for “Testing Requirements for Issuance of a Combined License”

Licensing Basis Events and Safety-Grade SSCs

PBMR Licensing Basis Events:

- Internal, at power LBEs submitted January 31, 2002
- RAIs documented; will be transmitted May 2002

Safety Grade SSCs:

- Safety grade SSCs submitted March 15, 2002
- RAIs are not planned

10 CFR 2.790 Reviews of Re-Submitted White Papers

- Exelon's request to withhold from public disclosure selected information in white papers did not meet 10 CFR 2.790 criteria
- White papers (and meeting handouts) were withdrawn, revised and resubmitted:
 - PBMR Nuclear Fuel
 - PBMR Design and Heat Removal
- Staff will review the revised white papers against 10 CFR 2.790 criteria and document outcome in a letter to Exelon

Potential Additional NRC Closeout Action Items

- Fuel cycle, transportation and waste issues
- Additional technical documents and correspondence
Exelon may submit
- SECY paper on PBMR (HTGR) policy-level issues